

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

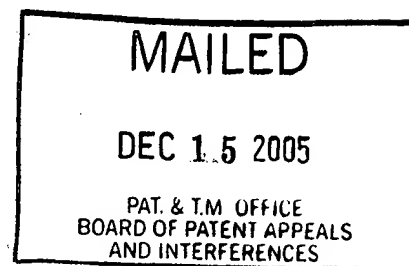
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte Dan S. Bloomberg and Luc Vincent

Appeal No. 2005-1976
Application No. 09/487,583

ON BRIEF



Before RUGGIERO, GROSS, and BARRY, *Administrative Patent Judges*.
BARRY, *Administrative Patent Judge*.

A patent examiner rejected claims 1-3, 23, 24, 27, 30, 31, and 39. The appellants appeal therefrom under 35 U.S.C. § 134(a). We affirm.

I. BACKGROUND

The invention at issue on appeal generates anti-aliased text or line art from compressed document images. An uncompressed grayscale or color image of a scanned document contains too much data for on-line storage and retrieval. (Spec. at 1.)

Mixed Raster Content ("MRC") is one approach to satisfy the compression needs of differing types of data. MRC separates a composite image into masks and separately applies an appropriate compression technique to each mask. (*Id.* at 2.) The image is then stored as ordered pairs (mask, image) of layers. (*Id.* at 1-2.) In "the most simple but non-trivial example," (*id.* at 2), two (mask, image) pairs are used. The first layer is the background image, represented as a low-resolution gray or color image; its mask covers the entire image. The second layer is the text/line art layer, represented by a binary, high-resolution mask and a very low-resolution foreground color image painted through the high-resolution mask. (*Id.*)

Regardless of the compression method used on the text or line art mask, however, when rendered, the text or line art features stair-steps on nearly horizontal or vertical lines. The text or line art image quality suffers from severe aliasing when sub-sampled. (*Id.*) These problems make conventional MRC unacceptable for applications requiring that compression loss be unobservable, e.g., for scanning a book where a visually lossless archival gray image must be saved. (*Id.* at 3.)

Accordingly, the appellants' invention employs another (mask, image) pair for "boundary pixels," i.e., pixels for which at least one of their eight nearest neighbors is of an opposite color, of the text or line art mask. (*Id.*) Figure 16 of the appellants'

specification depicts their method. In step S1610, an image is scanned specially to determine the grayscale values of the boundary pixels at high-resolution. In step S1620, the grayscale image data are "binarized" to produce high-resolution binary data. (*Id.* at 14.) In step S1630, the boundary pixels are identified. In step S1640, the boundary pixels are separated into interior and exterior pixels, which are boundary pixels that are on and off, respectively, in the text or line art mask. (*Id.*)

In step S1650 the interior and exterior pixels are analyzed separately to determine "connectedness." (*Id.*) For example, two pixels are "4-connected" if their positional relation is the second pixel is positioned to the immediate left, right, top or bottom of the first pixel. (*Id.*) In step S1660, gray scale values are calculated for the boundary pixels based on an assumption that the grayscale value of the original boundary pixel is correlated with the number of connected pixels in the mask image of opposite (or same) color. (*Id.*) For example, an interior (on) pixel with three 4-connected off pixels is expected to be lighter than one with only one 4-connected off pixel. (*Id.* at 14-15.) In step S1670, the high-resolution binary boundary pixel values and the derived grayscale values are stored in memory as compressed data. In step S1680, the high-resolution binary boundary pixel data and the derived grayscale values are used to render an image. (*Id.* at 14.)

A further understanding of the invention can be achieved by reading the following claims.

1. An image rendering system comprising:

a scanner that scans an image and produces image data;

an encoder that is coupled to the scanner and encodes the image data to provide encoded image data including anti-aliased grayscale text or lineart [sic] data that includes an identification of boundary pixels and associated pixel values, wherein the encoder separates the boundary pixels into interior boundary pixels and exterior boundary pixels; and

a decoder that is coupled to the encoder and decodes the encoded image data to provide decompressed data including anti-aliased text or lineart [sic] data and renders the decompressed data.

30. An image rendering method comprising:

scanning an image to obtain scanned image data including text or lineart [sic] data;

generating an anti-aliased grayscale version of the text or lineart [sic] data including determining pixel values of the boundary pixels in the anti-aliased grayscale version of the scanned text or lineart [sic] data;

separating the pixels into boundary pixels and non-boundary pixels;

rendering the image using the determined pixel values.

Claims 1-3, 23, 24, 27, 30, 31, and 39 stand rejected under 35 U.S.C. § 103(a) as obvious over UK Patent Application GB 2247596 ("Jozefowski") and European Patent Application EP 0590923 ("Smith").

II. OPINION

Our opinion addresses the claims in the following order:

- claims 30, 31, and 39
- claims 1-3, 23, 24, and 27.

A. CLAIMS 30, 31, AND 39

"[T]o assure separate review by the Board of individual claims within each group of claims subject to a common ground of rejection, an appellant's brief to the Board must contain a clear statement for each rejection: (a) asserting that the patentability of claims within the group of claims subject to this rejection do not stand or fall together, and (b) identifying which individual claim or claims within the group are separately patentable and the reasons why the examiner's rejection should not be sustained."

In re McDaniel, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002) (citing 37 C.F.R. §1.192(c)(7) (2001)). "If the brief fails to meet either requirement, the Board is free to select a single claim from each group of claims subject to a common ground of rejection as representative of all claims in that group and to decide the appeal of that rejection based solely on the selected representative claim." *Id.*, 63 USPQ2d at 1465.

When the patentability of dependent claims in particular is not argued separately, the claims stand or fall with the claims from which they depend. *In re King*, 801 F.2d 1324,

1325, 231 USPQ 136, 137 (Fed. Cir. 1986); *In re Sernaker*, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

Here, the appellants neither assert that claims 30, 31, and 39 do not stand or fall together nor argue the patentability of claims 31 and 39 separately. Therefore, claims 31 and 39 stand or fall with claim 30, which we select as representative.

With this representation in mind, "[r]ather than reiterate the positions of the examiner or the appellants *in toto*, we focus on the point of contention therebetween." *Ex parte Muresan*, No. 2004-1621, 2005 WL 951659, at *1 (Bd.Pat.App & Int. Feb 10, 2005). Observing that claim 30 "only claim[s] boundary and non-boundary pixels," (Examiner's Answer at 8), the examiner finds that "Jozefowski expressly teaches [these] (Figs. 1B, 2B-C, page 6)." (*Id.*) The appellants make the following argument.

Jozefowski takes a predetermined number of sequential pixel values in the frame buffer, uses the individual intensity values of the predetermined number of consecutive pixels to create a single low resolution pixel value, and then moves on to the next predetermined number of sequential pixel values in the frame buffer to generate the next low resolution pixel, not taking into account whether or not the pixels retrieved from the frame buffer are boundary pixels or non-boundary pixels. Therefore, Jozefowski has no need to separate the pixels into boundary pixels and non-boundary pixels. . . .

(Reply Br. at 3.)

"In addressing the point of contention, the Board conducts a two-step analysis. First, we construe the representative claim at issue to determine its scope. Second, we determine whether the construed claim would have been obvious." *Ex Parte Massingill*, No. 2003-0506, 2004 WL 1646421, at *2 (Bd.Pat.App & Int. 2004).

1. Claim Construction

"Analysis begins with a key legal question — *what* is the invention *claimed*?" *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1567, 1 USPQ2d 1593, 1597 (Fed. Cir. 1987). In answering the question, "the Board must give claims their broadest reasonable construction. . . ." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1668 (Fed. Cir. 2000). "Moreover, limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181, 1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, claim 30 recites in pertinent part the following limitations: "separating the pixels into boundary pixels and non-boundary pixels. . . ." Giving the representative claim its broadest, reasonable construction, the limitations require differentiating boundary pixels from non-boundary pixels.

B. Obviousness Determination

Having determined what subject matter is being claimed, the next inquiry is whether the subject matter would have been obvious. "In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). Obviousness is "based on underlying factual determinations including . . . what th[e] prior art teaches explicitly and inherently. . . ." *In re Zurko*, 258 F.3d 1379, 1383, 59 USPQ2d 1693, 1696 (Fed. Cir. 2001) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ 1614, 1616 (Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995)). "After a *prima facie* case of obviousness has been established, the burden of going forward shifts to the applicant. Rebuttal is . . . 'a showing of facts supporting the opposite conclusion'. . . ." *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984) (quoting *In re Heldt*, 433 F.2d 808, 811, 167 USPQ 676, 678 (CCPA 1970)).

Here, Jozefowski "provides an anti-aliasing system for use in the construction and manipulation of computer-generated video images. . . ." P. 5. The system comprises a frame store, an image data input means, and an image data output

means. Pp. 5-6. The image data input means inputs data to the frame store "at a resolution higher than that required for [an associated] display system. . . ." P. 5. The output means "tak[es] the data from the frame store, convert[s] it into a form having the lower resolution required by the display system, and . . . output[s] this lower resolution data to the display system." P. 6.

The output means' "us[e of] . . . stored sub-pixel data to determine the data in the relevant boundary display pixels," *id.*, validates the examiner's finding that determining the data in the relevant boundary pixels involves differentiating boundary pixels from non-boundary pixels. The appellants fail to address, let alone rebut, the examiner's finding. Therefore, we affirm the obviousness rejection of claim 30 and of claims 31 and 39, which fall therewith.

B. CLAIMS 1-3, 23, 24, AND 27

The appellants neither assert that claims 1-3, 23, 24, and 27 do not stand or fall together nor argue the patentability of claims 2, 3, 23, 24 and 27 separately. To the contrary, they assert, "Claims 2, 3, 23, 24 and 27 depend from claim 1 and are patentable over Jozefowski at least for the aforementioned reasons that claim 1 is patentable." (Appeal Br. at 1.) Therefore, claims 2, 3, 23, 24, and 27 stand or fall with claim 1, which we select as representative.

The examiner makes the following findings.

Appellant defines the words "exterior" and "interior" in the page 14 of specification as "the boundary pixels are separated into interior and exterior pixels, which are boundary pixels are ON and OFF, respectively, in the text or lineart [sic] mask." ON pixel is interior pixel and OFF pixel is exterior, which give two different status of grays to the boundary pixels. Here, Jozefowski defines the boundary pixels to 4 different grays. Interior pixel is the pixel has dark gray and located in the lineart [sic] (Fig. 1b and 2b) or the inland area (Fig. 2c). [The] **[o]nly difference** is that Jozefowski did not name them as "interior" and "exterior."

(Examiner's Answer at 10.) The appellants argue, "Jozefowski does not consider the pixel value when determining the hatching to be applied, and therefore the four different hatches of Jozefowski cannot correspond to the interior or exterior designation according to claim 1." (Reply Br. at 4.)

1. Claim Construction

"Claims must be read in view of the specification, of which they are a part."

Markman v. Westview Instruments, Inc., 52 F.3d 967, 979, 34 USPQ2d 1321, 1329

(Fed. Cir. 1995). Here, claim 1 recites in pertinent part the following limitations:

"separates the boundary pixels into interior boundary pixels and exterior boundary pixels;" The appellants' specification explains that "boundary pixels are separated into interior and exterior pixels, which are boundary pixels that are ON and OFF, respectively. . . ." Reading the representative claim in view of the specification, the limitations require identifying pixels that are on and pixels that are off.

2. Obviousness Determination

Jozefowski describes its aforementioned conversion of data from a higher resolution to a lower resolution for display "with reference to Figures 5A & B. . . ."

P. 24. "[E]ach display pixel comprises a number of sub-pixel elements. These must . . . be combined in a suitable manner to obtain an acceptable image." *Id.* "A simple system . . . would therefore have four sub-pixels for every display pixel. Simple averaging of these four pixels provides a reasonable result, as shown in Figure 5." *Id.* More specifically, "Figure 5A shows the stored numeric values representing part of a thick straight line, super sampled at twice the horizontal and vertical display resolutions. Each store (sub-pixel) location is holding the value '1'. These are fed through a simple filter, whereby the sub-pixel location values are each multiplied by 4, the four results are added together, and the resultant sum is used to define the display pixel value." *Id.* "It will be seen that in this way the four sub-pixels (only one of which is of value 1 in the bottom left-hand corner (coordinates 1,1) of Figure 5A are converted to $1 \times 4 + 0 \times 4 + 0 \times 4 + 0 \times 4 = 4$ which is the value for the corresponding pixel at (1,1) in Figure 5B. . . ."

Pp. 24-25.


The reference's averaging of the numeric values of the four sub-pixels belies the appellants' argument that "Jozefowski does not consider the pixel value when determining the hatching to be applied. . . ." (Reply Br. at 4.) Furthermore, we find that

each sub-pixel location that holds the value "1" is on; while each that holds no such value is off. Therefore, we affirm the obviousness rejection of claim 1 and of claims 2, 3, 23, 24, and 27, which fall therewith.

III. CONCLUSION

In summary, the rejection of claims 1-3, 23, 24, 27, 30, 31, and 39 under § 103(a) is affirmed.

"Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences. . . ." 37 C.F.R. § 1.192(a). Accordingly, our affirmance is based only on the arguments made in the briefs. Any arguments or authorities omitted therefrom are neither before us nor at issue but are waived. *Cf. In re Watts*, 354 F.3d 1362, 1367, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004) ("[I]t is important that the applicant challenging a decision not be permitted to raise arguments on appeal that were not presented to the Board.") No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).


JOSEPH F. RUGGIERO
Administrative Patent Judge

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